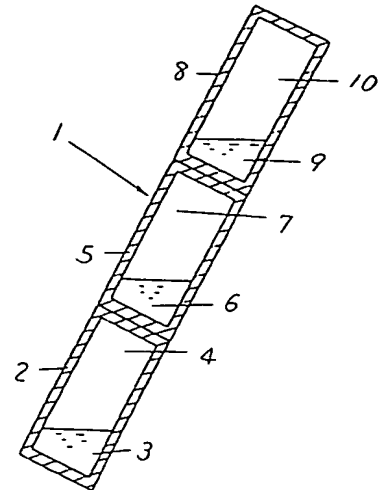


(54) COMPOSITE HEAT PIPE

(11) 62-172188 (A) (43) 29.7.1987 (19) JP
 (21) Appl. No. 61-15185 (22) 27.1.1986
 (71) MATSUSHITA REFRIG CO (72) KENJI FUJINO
 (51) Int. Cl. F28D15/02

PURPOSE: To obtain a heat pipe capable of coping freely with the temperature of a supplied heat source from a high-temperature area to low-temperature area and transferring heat under various kinds of operating temperatures by a method wherein the terminals of two sets or more of the heat pipes having different operating temperatures are connected in series by an order from the heat pipe having high operating temperature to the same having low operating temperature or in a sequence contrary to this order.

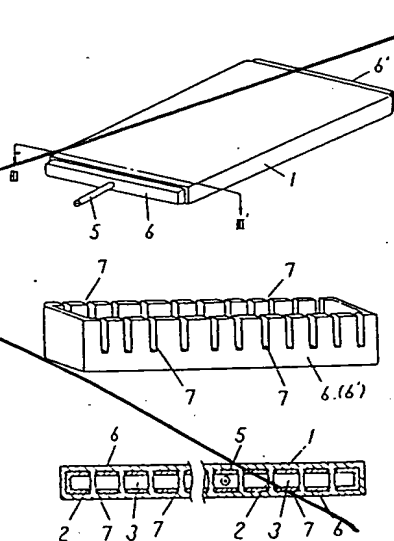
CONSTITUTION: Water is encapsulated into a heat pipe 2, methanol is encapsulated into the heat pipe 5 and Freon 113 is encapsulated into the heat pipe 8. The terminals of the heat pipes 2, 5, 8 are connected in series by brazing, bonding or the like by an order from the heat pipe having higher boiling point of operating liquid or the sequence contrary to this order. When a composite heat pipe 1 is applied to the heat source of 100~150°C, the heat of the heat supplying source is transferred to the evaporating section 3 of the heat pipe 2, the evaporating section 6 of the heat pipe 5 is heated, methanol is evaporated, the heat is transferred to the evaporating section 9 through a condensing section 7, Freon 113 is heated and evaporated whereby the heat is transferred to the condensing section 10. Heat exchangers are attached to the condensing sections of respective heat pipes 2, 5, 8 whereby the heat under an arbitrary temperature may be taken out from the composite heat pipe 1 respectively.

**(54) FLAT TYPE HEAT PIPE**

(11) 62-172189 (A) (43) 29.7.1987 (19) JP
 (21) Appl. No. 61-14047 (22) 24.1.1986
 (71) MATSUSHITA REFRIG CO (72) TOSHIMICHI MUROZUMI
 (51) Int. Cl. F28D15/02

PURPOSE: To obtain a flat type heat pipe capable of eliminating the protruded steps of a sealing cap, abutting the cap against a flat surface and mounting radiating fins by a method wherein slits are provided on the rims of the cap at positions corresponding to partitioning walls, the partitioning walls are engaged with the gaps of the slits and the cap is connected to the main body of a vessel under sealing.

CONSTITUTION: In caps 6, 6', having U-shape section and sealing the end of the main body 1 of a flat type vessel formed with a plurality of fluid paths 3 in parallel to a plurality of partitioning walls 2 therein, slits 7 having predetermined lengths are provided at positions corresponding to the partitioning walls 2 at the end of the cap while the partitioning walls 2 are engaged with the gaps of the slits and sealing is effected whereby a heat pipe is obtained. The sealing caps 6, 6' are consisting of the main body 1 of a flat type heat pipe vessel made of aluminum and a plurality of slits 7 provided on the rims at positions corresponding to the positions of the partitioning walls 2 formed lengthwisely in the vessel while the caps are fitted to the outer surface of both ends of the main body 1. The cap 6 of one end is provided with a nozzle 5 and respective members are connected through welding, soldering or the like. The protruded steps of the sealing caps of both ends are eliminated, whereby the abutment of the caps against flat surfaces and the mounting of radiating fins may be effected.

**(54) HEAT ACCUMULATING DEVICE**

(11) 62-172190 (A) (43) 29.7.1987 (19) JP
 (21) Appl. No. 61-14510 (22) 24.1.1986
 (71) NIPPON DENSO CO LTD (72) ETSUJI NOMURA(2)
 (51) Int. Cl. F28D20/00

PURPOSE: To obtain a heat accumulating device capable of generating heat surely when the heat is to be generated by a method wherein a path opening and closing means, communicating the inside of a crystal holding chamber with the inside of a heat accumulating vessel or separating them switchably, is provided in the fitted device.

CONSTITUTION: The heat of a heater 5 is generated before using a pocket heater to heat accumulating medium 3 or hydrogenated sodium acetate of crystalline phase in heat accumulating vessels 4a, 4b to the melting point (58°C) thereof or higher. The hydrogenated sodium acetate of crystalline phase is gelled gradually and then is gelled perfectly. After the heat accumulating medium in the heat accumulating vessels 4a, 4b is dissolved perfectly, a plug 5b is pulled out of a socket and the heating is stopped. The temperature of the heat accumulating medium 3 in the heat accumulating vessels 4a, 4b is reduced under heat accumulating process, however, super-cooled condition is maintained and heat accumulation is effected under gelled condition. Under heating process, necessitating room heating, the bottom 66b of the spool 66 of a valve 6 is pushed, then, a valve body 63 is pushed up and a space A is communicated with the space B, therefore, the heat accumulating medium under the condition of over-cooled gel in the space A is contacted with the crystal species in the space B whereby latent heat, the heat medium, is crystallized at a stroke and latent heat accompanied by the transition of phase is discharged to effect room heating.

